ELECTRICAL REVIEW

Vol. CXLVII 29th SEPTEMBER, 1950 No. 3801

Managing Editor: HUGH S. POCOCK, M.I.E.E. *Technical Editor:* W. O. FENWICK, M.I.E.E.
Industrial Editor: J. H. COSENS *Technical Consultant:* C. O. BRETTELLE, M.I.E.E.

IN THIS ISSUE

Protecting the Consumer	497
Stourport Power Station	499
Electricity Supply	505
I.E.E. at Stratford	507
Views on the News	510
Overseas Electrical Trade	511
Personal and Social	513
Lamp Publicity	515
South African News	516
I.E.E. Section Chairmen	517
Mangakino Power Scheme	518
Commerce and Industry	519
Financial Section	523
Street Lighting Code	525
Contract Information	526
Classified Advertisements	75
Index to Advertisers	90

EDITORIAL, ADVERTISING & PUBLISHING OFFICES: Dorset House, Stamford St., London, S.E.1. Telegraphic Address: "Elecrev, Sedist, London." Code: ABC. Telephone No.: Waterloo 3333 (60 lines). Entered as Second Class Matter at the New York, U.S.A., Post Office. Annual Subscription: Home and Overseas £3 6s. 0d.; U.S.A. and Canada $11.00. Cheques & P.Os. (on Chief Office, London) payable to ELECTRICAL REVIEW PUBLICATIONS LTD. and crossed "Lloyds Bank."

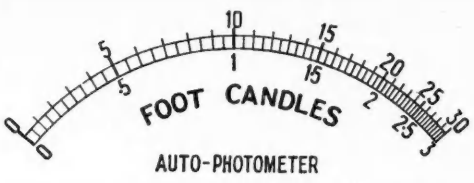
A COMPLETE RANGE

of Photometers

VISUAL AND PHOTOELECTRIC

Above: *Autophotometer Model II. Portable Pattern with separate test surface for direct measurement of illumination. Send for Sheet 464A.*

On right: *Typical scale showing sensitivity at low illumination values.*



Everett Edgcumbe Photometers are in world-wide use, both in Industrial and Educational Establishments. Apart from specially adapted patterns, the available range includes:
'LUXOMETER' Visual Photometer, for brightness and illumination measurements.
'AUTOPHOTOMETER' Photoelectric Pattern as illustrated.
'CUBE' Integrating Photometer for lumen measurements.
'POLAR CO-ORDINATE' Photometer for light distribution measurements.
'BENCH' Photometer for fundamental measurements against standard lamps.

Makers of electrical instruments for indicating, recording and controlling; photometric apparatus; process controls.

EVERETT EDGCUMBE

DHB **COLINDALE WORKS, LONDON, N.W.9.** **Tel.: COLINDALE 6045**

ELECTRICAL REVIEW

Vol. CXLVII No. 3801 29TH SEPTEMBER, 1950

THE OLDEST ELECTRICAL PAPER ● ESTABLISHED 1872

Protecting the Consumer

A TOO-CUMBERSOME SYSTEM

IN theory, national ownership is intended to protect the public from "exploitation" and to ensure that the services concerned are run in the interests of the public and not for the benefit of owners or investors. But monopolies, whether public or private, are free from the "disadvantages" resulting from competition and customers' freedom of choice.

Consequently, whenever public ownership has been imposed on an industry or service, public opinion has demanded protection from the potential indifference to its needs and aspirations to which an impersonal bureaucracy is prone. This protection has taken the form of consumers' or consultative councils which may act in one of two ways. They may either be agents of the national boards to gauge the possible public reactions to suggested policy, or even to interpret the boards' policy to the people affected; or they may be vehicles for conveying the views of the public to the boards. The first is really the task of a "public relations" department; the other, if effective, is the more desirable form.

Comparison of Councils

The subject is surveyed by Mr. A. M. de Neuman in a recent pamphlet* which sets out succinctly the differences in the constitution and objects of the councils set up for the coal, gas, electricity, transport and civil aviation industries and those proposed for the iron and steel industry. The author appears to compare the arrangements for the electricity supply industry unfavourably with those for gas, largely on account of the restriction of the powers of the Electricity Consultative Councils to their own areas, and because they must proceed to the Minister through the Central Authority, while Gas Consultative Councils have direct access to him.

Desirability of Independence

Our own view of these Councils has always been that there were less elaborate and more independent means of seeing that the boards were acquainted with the public's needs. We have said (and our remarks are quoted by Mr. de Neuman) that if there are to be Consultative Councils care must be taken that they do not come to be regarded as instruments of the Electricity Boards. So far they have been too dependent on the Boards for accommodation and services—no doubt for economy reasons—and their chairmen are members of the Area Boards. Then, although their members are nominated by local authorities and other interested bodies, the actual appointments are made by the Minister. This detracts from the Councils' independence, but it is difficult to suggest an alternative method.

Mr. Neuman deplores the cumbersome

* *"Consumers' Representation in the Public Sector of Industry". Students' Bookshops, Ltd., 4, Trumpington Street, Cambridge.* (3s.)

and duplicative machinery of consumers' councils, and suggests that better results might be obtained from independent area councils representing local consumers *vis-á-vis* all the nationalized industries. "Such a grouping of Councils, strongly reinforced by a really independent and well-endowed central research and information office of the highest standard, may be one of the solutions. On this basis common problems could be dealt with together . . . and common techniques of approaching the Boards and comparing the results from different Boards could be developed."

When the 1947 Bill was to go to committee we suggested (*Electrical Review*, 7th February, 1947) that the existing local electricity committees might be retained as protectors of the consumer. We still think that local authorities, as the elected representatives of the public, would have been more satisfactory watchdogs than the new bodies.

SPEEDY CONSTRUCTION

Of the engineering feats illustrated at the Enfield Cables film show last week (to which Lord Verulam provided a very able factual running commentary) the erection of Shipshaw hydro-electric station in Canada was probably the most inspiring. It demonstrated dramatically what can be done to provide power quickly under the greatest difficulties. In November, 1943, within 15 months of starting site work, the first two 100,000 h.p. turbines, urgently needed for producing aluminium for war purposes, were turning over and six of the remaining ten were commissioned in the following August. This compares well even with the meritorious records set up in the construction of Earley and Lynfi stations in Britain, also to meet a war emergency. The capital cost of the Shipshaw product, however, was twice the normal figure—an indication of the price of speed.

INDIAN IMPORT CONTROL

The Government of India has appointed a committee to inquire into the working of import control with reference to the methods followed in the fixing of import quotas for individual commodities, the procedure in dealing with applications for import licences and the organization of the machinery for import control. The committee is also to recommend methods of improving the efficiency of the Import Control Organization with a view to speeding up procedure. The Federation of Electricity Undertakings has asked its constituents to express their views on the subject of the inquiry, particularly the desirability of framing import policy for a longer period than six months, and on the scheme for the licensing of capital goods and heavy electrical plant. British manufacturers will await the committee's findings with considerable interest.

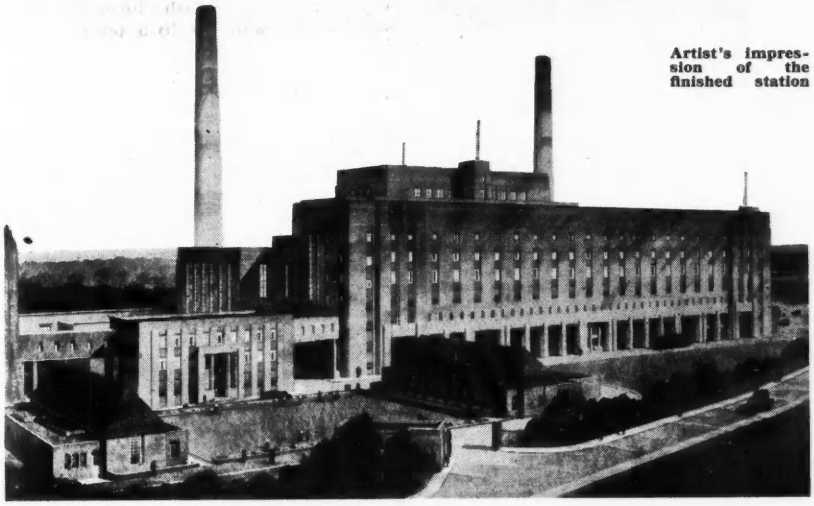
TAX ON WATER HEATERS

Just before Parliament adjourned last week Mr. Redmayne asked the Chancellor of the Exchequer why gas and electric water heaters were subject to different rates of purchase tax. Mr. Douglas Jay, who replied, again said that the higher charge upon electric immersion heaters was to "relieve the strain upon the peak load of the electricity supply industry." Why will Ministers persist in this erroneous belief when it has so often been proved false? Mr. Jay said that the Chancellor would continue to consult the Minister of Fuel and Power on this subject. We again appeal to Mr. Noel-Baker to assure his colleague that the continuance of the 100 per cent tax on immersion heaters is unjustifiable and unjust.

MINING GEAR

Although only one degree of flame proofness is recognized by the Ministry of Fuel and Power, costly equipment has been used quite extensively underground in coal mines regardless of the situation in which it is installed. Attention is called to this wasteful practice in a N.C.B. publication (No. EE(50)4) which is referred to on another page. The old excuse that less expensive non-flameproof gear is not enclosed sufficiently strongly to withstand rough handling is no longer valid. The risk of its transference to more dangerous localities is less likely to occur now than it has done in the past. The possibility of non-flameproof motors being employed to drive small in-bye pumps is probably the greatest hazard to-day.

Stourport "B" Power Station



Artist's impression of the finished station

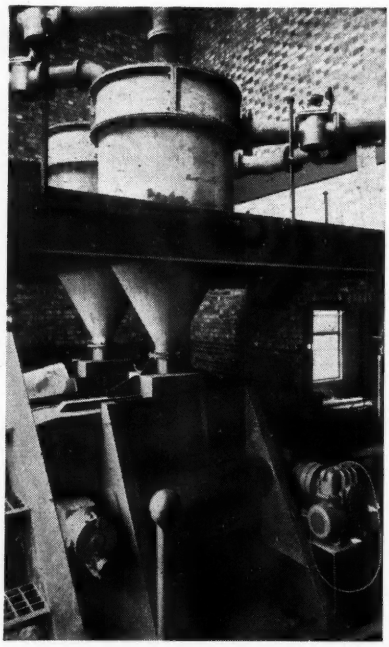
Several Advanced Non-standard Features

THE latest addition to the generating plant of the British Electricity Authority (Midland Division) is a 60 MW unit at Stourport "B" power station, which was officially commissioned on Tuesday of this week. The ultimate capacity of the new station will be reached about three years hence, when a second 60 MW set is due for completion. The steel-framed brick building will measure 408 ft by 266 ft by 132 ft 6 in at its highest point. With 180 MW in the adjacent "A" station the total kW installed on the site will then be 300 MW. An ample supply of condensing water is available from the River Severn, but the River Stour, which flows into it at this point, is hardly an asset owing to the débris it brings down from the Black Country.

Stourport "B" possesses several advanced non-standard features, among which are: The first slag-tap furnace in this country; turbine initial steam conditions of 1,250 lb/sq in and 950 deg F (which will be 1,500 lb and 1,050 deg for the second set); independent one-boiler one-turbine units; boilers of over 500,000 lb/hr evaporative capacity; supervisory turbine control; and heating of the office buildings by a heat pump using water from the circulating water discharge.

Coal is brought by rail from collieries in the neighbourhood. It has a volatile content of round about 30 per cent, an average calorific value of 10,800 B.Th.U./lb with 10 per cent of dry ash and 12 per cent of moisture and an ash-fusion temperature of 2,000 deg F.

The coal reception system of the "A" station has been extended to deal with the new station's requirements of 120 tons an hour, which is conveyed to bunkers or to storage (100,000 tons, common to the two stations). During transit samples of coal are automatically collected periodically and ground for analysis. From the bunkers the coal is taken by four chain-link enclosed conveyors *via* weighers to four pulverizing mills, each of 6.4 tons/hr (normal duty 9 tons maximum) and driven by 110 h.p. 1,460 r.p.m. motors.

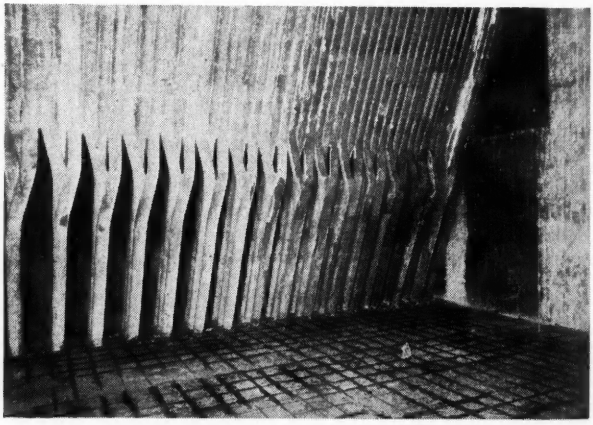


Dust cyclones and vacuum sealed dust feeder to collecting hopper

Pulverized fuel is blown downward into a primary section of the furnace of the Stirling boiler through eight vertical inter-tube burners. The adjacent wall tubes are studded, and between the studs plastic chrome ore has been hand-pressed on site. Molten slag continuously pours through a "monkey ring" in a Bailey block floor into a water hopper below, where it disintegrates to be sluiced away by the hydro jet system. The gases are swept through tubes near the bottom of this part of the furnace into a secondary, or dry-ash, furnace whence they pass upward to a pendent superheater. Lighting-up is by oil supplied under pressure through four burners, each consuming 750 lb/hr.

The two-drum boiler now installed is rated at 525,000 lb/hr at 1,275 lb/sq in and 975 deg F. Its heating surface in sq ft is distributed as follows: Exposed radiant, 2,600; convection, 2,700; primary furnace, 2,920; secondary furnace, 4,400; primary superheater, 14,630; secondary superheater, 4,870; economiser, 22,900. The high-temperature air heater, which is in the central pass of the continuous-steel-loop steaming economiser, has a heating surface of 17,700 sq ft and the low-temperature section 148,600 sq ft. Heat release at maximum continuous rating is 21,000 B.Th.U. per cu ft of combustion space. Steam temperature is controlled automatically by water-cooled attemperators between primary and secondary superheaters.

Two induced-draught and two forced-draught fans are driven through eddy-current couplings associated with 150-way rheostats, the former (120,000 cu ft/min) at 700 to 290 r.p.m. by 576 h.p. motors and the latter (52,000 cu ft/min) at 930 to 620 r.p.m. by 219 h.p. motors. Primary-air fans (40,000 cu ft/min) are driven by 360 h.p. motors at 1,475 r.p.m.



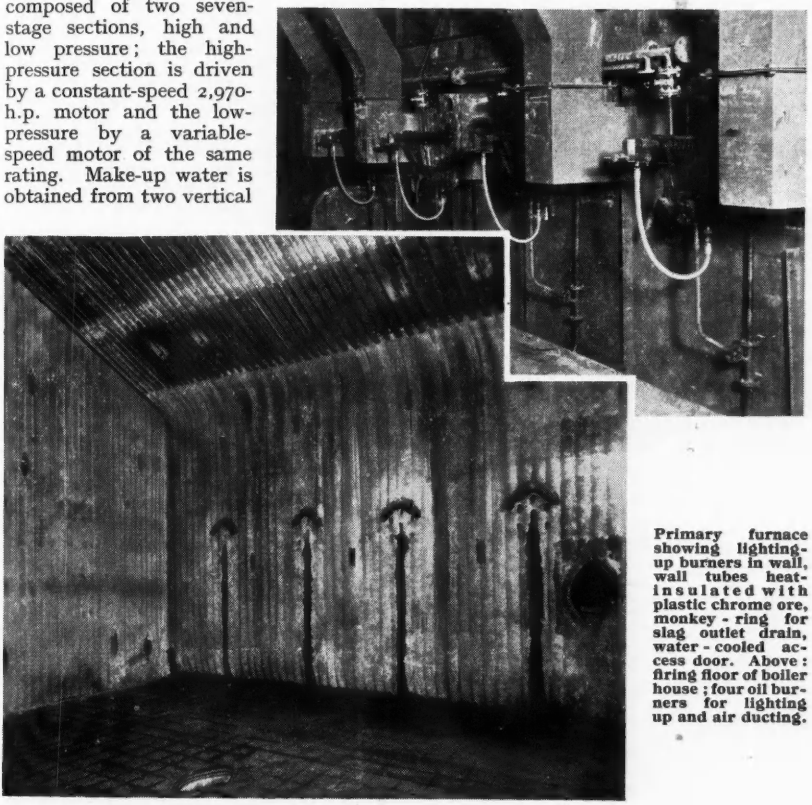
Lower part of primary-furnace wall opposite oil burners with slag screen and outlet through tubes to secondary furnace

Grit is extracted from the flue gases by two electrostatic precipitators operated at 40 to 45 kV (d.c.) and 96.5 ± 1 per cent efficiency. Exterior surfaces of the boiler are cleaned by B. & W. - B.T.H. soot blowers electrically operated in sequence.

Ash-removing and dust-handling plant, capable of dealing with 7½ tons/hr, includes duplicate recirculating pumps (18,000 gal/min against 275ft head), sealing water pumps (20 gal/min against 300ft head), air compressors (48 cu ft/min at 50 lb/sq in), a 100-ton dust storage hopper and two cyclone receiving tanks with rams for re-feeding combustible dust to the furnace.

Duplicate electric and one standby steam-turbine feed pumps are installed with individual duties of 650,000 lb/hr. The electric sets are both composed of two seven-stage sections, high and low pressure; the high-pressure section is driven by a constant-speed 2,970-h.p. motor and the low-pressure by a variable-speed motor of the same rating. Make-up water is obtained from two vertical single-effect evaporators (19,000 lb/hr each) taking bled steam at 22 lb/sq in.

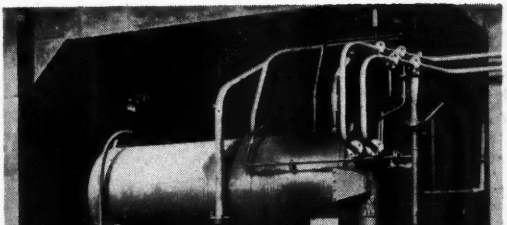
The English Electric 3,000 r.p.m. turbine comprises three cylinders in line; the low-pressure cylinder is of double-flow design exhausting at 85 deg F to twin condensers giving a cooling surface of 48,600 sq ft. Stop-valve steam conditions are 1,250 lb/sq in and 950 deg F. With condenser cooling water having an inlet temperature of 65 deg F the full-load vacuum is 28.75 in Hg (bar 30in), the heat consumption is 9,040 B.Th.U./kWh and the steam consumption 8.818 lb/kWh. Five-stage steam extraction is employed, giving an economiser inlet temperature of 460 deg F, with three high-pressure surface heaters and two low-pressure heaters of the direct-contact



Primary furnace showing lighting-up burners in wall, wall tubes heat-insulated with plastic chrome ore, monkey-ring for slag outlet drain, water-cooled access door. Above: firing floor of boiler house; four oil burners for lighting up and air ducting.

spray type. There are two full-duty extraction pumps, two 60 per cent air ejectors and a 40 per cent starting ejector.

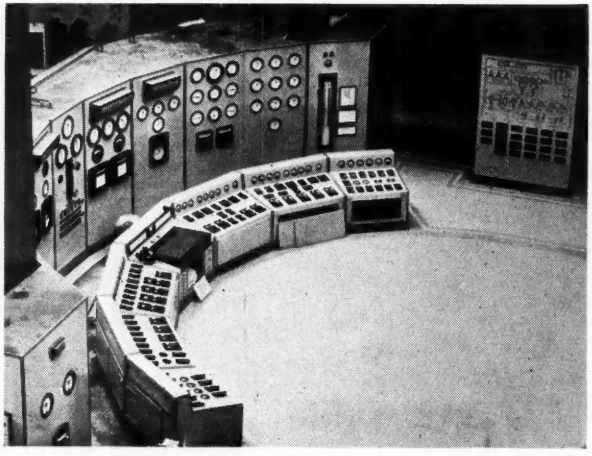
A prominent feature of the turbine house is a supervisory desk facing panels for indicating and recording instruments on a comprehensive scale. Among these are electronic instruments which reveal immediately any eccentricity of the turbine rotor owing to unequal heating during starting and running up of the set and also the axial expansion between the rotor and the casing at any time. All motors are remotely controlled from this point.



Oil seal treating unit for the hydrogen-cooled alternator

Two vertical-spindle axial-flow circulating-water pumps installed in the basement (which is at ground level) can deliver 1,260,000 gal/hr each against 27ft head and are driven by 315 h.p. motors at 360 to 730 r.p.m. through magnetic couplings of the type used for the draught fans. There are also two 60 h.p. 730 r.p.m. vertical-spindle pumps, each capable of supplying 125,000 gal/hr against 65ft head, for oil cooling and hydrogen cooling for the main alternator and air cooling for the house alternator.

The main alternator, generating at 11 kV, is rated at 55.5 MW at 80 per cent power factor and its subtransient reactance is 13 per cent. The remainder of the 60 MW is made up by a 4.5 MW 3.3 kV alternator on the same shaft for supplying power to the station auxiliaries. Hydrogen of not less than 96 per cent purity for cooling the main alternator is at a pressure of 0.5 lb/sq in, but provision is made for working at 15 lb, which would enable it to generate 60 MW. Hydrogen make-up is 100 cu ft per 24 hours and would be 300 cu ft at the higher pressure.



Duplicate motor-driven exciter sets are installed. These consist of four machines: a 520 h.p. motor; a 285 kW d.c. generator (558 V min and 690 V ceiling) providing the field of the 55.5 MW machine and a pilot exciter; and a 224 V (358 V for 5 min) d.c. generator serving the 4.5 MW machine. Standby supply for auxiliaries

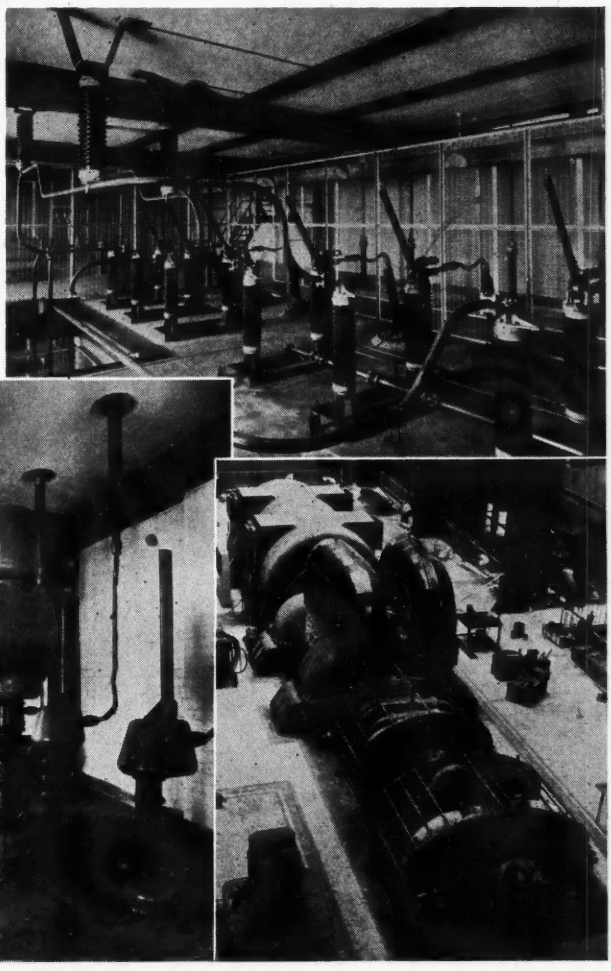
Unit control panels and desk for boiler house (right) and turbine house (left)

is obtainable from a 6,000 kVA 66/3.3 kV station transformer.

Switching of the alternator is performed on the 66 kV side of a 75,000 kVA water-cooled oil-immersed transformer installed in a cell, open on one side, at the side of the building. The combined reactance of alternator and transformer is 25 per cent. The circuit-breaker, of the indoor air-blast type, has a rupturing capacity of 1,500 MVA. The output is further stepped up to 132 kV at the nearby Grid sub-station. Connections between the alternator, transformer and breaker are bare copper tubes. Oil-filled cable is used for other 66 kV connectors. For controlling the 3.3 kV motors driving auxiliaries, truck-type switchgear is employed and for smaller motors 400 V air-break contactors. Wiring is by Pyrotenax cable.

In order to try out various possible methods of recovering heat from the condenser cooling water, three entirely independent heating systems were designed and installed in the offices and workshops.

A heat pump in the workshops serves



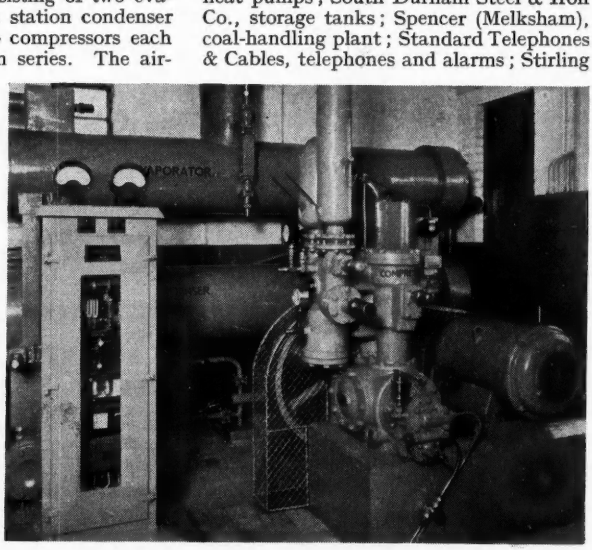
Right: 66 kV isolators for alternator. Below: air-blast circuit-breaker and (right) turbo-alternator with casings removed from steam chest and high- and intermediate-pressure cylinders and from circulating-water pipes for hydrogen coolers

a plenum heating system. Two compressors are connected in parallel with an evaporator and a condenser through a conventional refrigerating circuit. The evaporator is supplied with station condenser cooling water from the ring main, the temperature drop being approximately 4 deg F. The plenum unit consists of a fabric filter, the condenser, and a centrifugal fan.

A second heat pump serves a low-temperature hot-water panel-heating system in the offices behind which it is located. The plant consists of a compressor, an evaporator supplied with station condenser cooling water, and a condenser. Heat is extracted from the condenser by a centrifugal pump constantly recirculating the water of the office panel-heating system between the condenser and a thermal storage vessel.

The third plant is a plenum air-conditioning system for the offices and is situated in the same building as Plant No. 2. There are two independent refrigeration circuits consisting of two evaporators supplied with station condenser cooling water and two compressors each with two condensers in series. The air-conditioning plant consists of an electrostatic filter, a centrifugal fan, an air washer of the spray type and a scrubber.

Our thanks are due to the B.E.A. (Midland Division), to Mr. G. E. C. Attwood, station superintendent, Stourport and to Mr. R. C. Clingan, of Ewbank & Partners (the consulting engineers), for facilitating the preparation of this article, and to Farmer and Dark (the architects), for the illustration of the exterior of the building.



No. 2 heat pump, office heating installation

Principal contractors were: Aiton & Co., pipework; Sir Wm. Arrol, & Co., ash-handling crane; Babcock & Wilcox, ash- and dust-handling plant; Bailey Meters and Controls, control board and automatic combustion control; Brackett & Co., circulating-water band screen; Chimneys, Ltd., chimney; Chloride Batteries, storage batteries; Contactor Switchgear, 400 V contactors; Dorman, Long & Co., steelwork; Drysdale & Co., main circulating-water pumps; English Electric Co., turbo-alternator, condenser, high-pressure feed-water heaters, transformers, 66 kV and 3.3 kV switchgear and rectifiers; Harland Engineering Co., auxiliary circulating-water pumps; Hick, Hargreaves & Co., low-pressure feed-water heaters and ejectors; Hopkinsons, high-pressure valves; Howdens, draught fans; Ledward & Beckett, stationary circulating-water screens; London Electricity Board, cabling and wiring; Sir Robert McAlpine & Sons, civil engineering and building works; Mather & Platt, fire extinguishing system; Herbert Morris, pump-aisle crane; Pirelli-General Cable Works, oil-filled 66 kV cables; Redler Conveyors, coal feed to pulverizing mills; Rosser & Russell, heat pumps; South Durham Steel & Iron Co., storage tanks; Spencer (Melksham), coal-handling plant; Standard Telephones & Cables, telephones and alarms; Stirling Boiler Co., boiler plant; Stothert & Pitt, turbine-room crane; Sturtevant Engineering Co., electrostatic precipitators and vacuum cleaning plant; United Filters and Engineering, raw-water filters; G. & J. Weir, Ltd., boiler feed pumps.

ELECTRICITY SUPPLY

Supplies to New Estates

Cable-laying in Mount's Bay

LOCAL authorities in the North East are considering a report of a meeting with the North Eastern Electricity Board on the question of electricity supplies to new housing estates. The meeting agreed that consultations should take place on the general architectural appearance of the sub-stations to see that they harmonized as much as possible with other buildings. No development charge would be payable by the Board in regard to substation sites, and rents would be fixed on the basis of 3 per cent of the district valuer's valuation. The Board would provide cable ducts at its own cost in roadways, the ducts to be put in place by the local authority. In view of the present economic conditions no objection would be raised to the continuance for the time being of the practice of laying branch service cables inside houses, provided that not more than four houses were thus served from each service entering from the outside. It was agreed that there should be the fullest possible co-operation between the Board and the local councils on the question of holding up the permanent laying of footpaths until cables were laid.

Showroom of the Rawalpindi Electric Power Co., Ltd., Pakistan, illuminated for the Independence Day celebrations last month

Altered Installations

Tenants of Golborne (near Wigan) Council houses who have tampered with the original electrical installation may be charged with the cost of testing it, and, if necessary, making good the installation. This decision by the Council refers to installations which, through interference, do not comply with the regulations of the I.E.E. or the Housing Dept. Tenants of pre-war council houses are being asked to report additions which have been made to the original installations.

Line Removal Sought

Holt Parish Council recently passed a resolution expressing the view that overhead line poles and cables erected by the Eastern Electricity Board on Spout Hills should be removed as soon as possible. This decision was taken in spite of the fact that statutory consent to the erection of the line had been given by the Rural District Council and that the Parish Council itself had signed the wayleave agreement. Pointing this out, Mr. W. J. Scarff, the Board's district manager, said he was amazed that the Council should now ask them to terminate the agreement. An alternative route suggested would increase the length from 180-yd to 380yd.

Cables Across the Axe

Axminster Rural District Council, which supported a letter from the Axe Vale Yacht Club to the South Western Electricity Board complaining of the danger of the h.v. cable crossing the River Axe at Axmouth, where two men were recently drowned, received a copy of the Board's reply to the Club. It pointed out that the appropriate authority for ensuring the safety of the public in electrical matters was the Minister of Fuel and Power, who was being asked whether he considered that any exceptional clearance was necessary in this case. The Board, how-

ever, did not wish to adhere too rigidly to minimum requirements, and was contemplating reconstructing the line to give a clearance of some 25ft between the lines and the level of normal high water. With regard to the l.v. line the Board felt that this was so close to the bridge that it could not interfere with any possible river traffic. The Rev. W. H. Dormor thought that as the h.v. cable was not marked on Admiralty charts (the river being tidal water) it should have guard wires, and the Council agreed to write asking for this to be done.

New Scottish Plant

We have already given details of the additional B.E.A. plant brought into commission in August. The Ministry of Fuel and Power returns also showed an increase of 33,000 kW in the North of Scotland district. This was the result of the second turbine of the Loch Sloy hydro-electric scheme being brought into operation. The unit is a vertical Francis type supplied by the English Electric Co., Ltd.

Supply to St. Michael's Mount

Following the successful laying of a submarine cable from the shore of Mount's Bay, Cornwall, to picturesque St. Michael's Mount, the castle on the Mount and the village at its foot will shortly be provided by the South-Western Electricity Board with a mains supply of electricity to replace that given by the present private generating plant.

The cable link between the Board's Marazion substation and the Mount involved a race against the tide which was won only by a matter of seconds. The 830yd length of 3-core, armoured 11 kV cable was mounted on rollers and towed across the sands by tractors, and the tractors had frequently to work in the surf. A furrow was afterwards ploughed through the sand and the cable was buried to a depth of one foot. The operation was carried out by Pirelli-General Cable Works, Ltd.

The requirements on the Mount will be catered for by two 125 kVA transformers with a probable maximum demand of 100-150 kVA. One interesting use of electricity on the Mount is for the operation of the winding engine of the railway used for transporting goods up the 200ft incline.

Denbigh Rural Supply

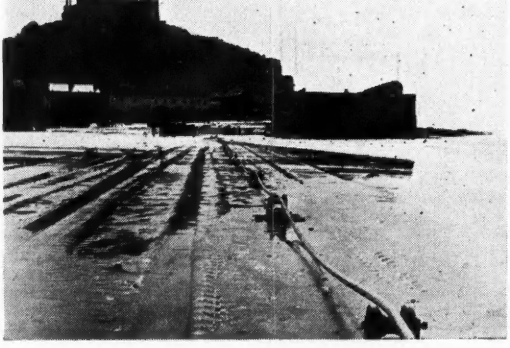
The extent of the Merseyside and North Wales Electricity Board's plans to electrify rural areas was explained to residents of Llanferres, Denbighshire, by Mr. W. Gilchrist, the Board's chief commercial officer, when an electricity supply was switched on in the parish. Mr. Gilchrist said that the 400,000 sq miles in need of electrification had been divided into 124 sections each of approximately 20 sq miles, with an average of about 400 prospective consumers. The scheme in Llanferres was only part of one of the sections in Denbighshire. There were 660 premises in the section and the occupants of 616 of these, on being canvassed, had already agreed to take a supply. One of the Board's stipulations was that when it went to a district it wanted to finish the job completely and not have to return to connect people who had not wanted electricity when it was offered.

Electrical Installations

Haddington (East Lothian) Town Council is to have electricity installed in 250 houses at present lit by gas.

Kidderminster Corporation is to install electric lighting and heating in 332 of the Council's pre-war houses.

The Merseyside and North Wales Electricity Board has authorized a scheme for supplying electricity to 220 houses in Guildford Road and Central Avenue, Birkdale, Southport.



Cable laying between St. Michael's Mount and Marazion, Cornwall

I.E.E. at Stratford

Annual Tour of Supply Section Members

ONE-HUNDRED and sixty members and their ladies assembled at four hotels in Stratford-upon-Avon last week-end for the three-day annual "summer meeting" of the Supply Section of the Institution of Electrical Engineers under the chairmanship of Mr. J. W. Leach.

The programme began with a Friday morning visit to the Rugby works of the British Thomson-Houston Co., Ltd., covering a site area of some 123 acres on which are 147 buildings with a floor area of over two million sq ft and employing almost half the 24,000 people occupied in the company's eleven factories.

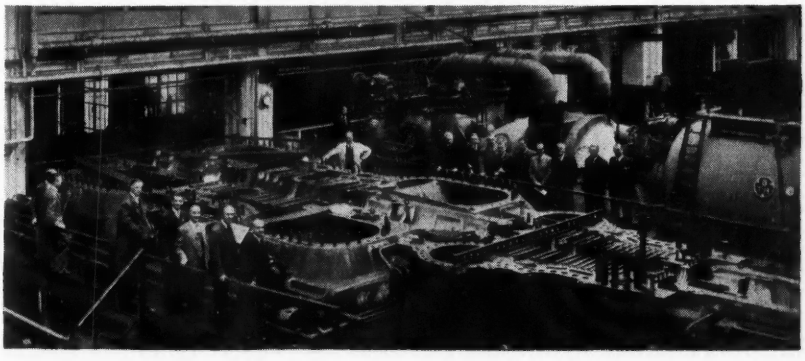
A new approach road for loads weighing up to 250 tons now provides direct access to all parts of the works, recent additions to which have included the first section of extensions devoted exclusively to the manufacture of heavy plant. The main bay of this building is 500ft long and 90ft wide; with annexes and galleries, the floor area is 125,000 sq ft and the height has necessitated high power illumination by fourteen "Mercra" 5.5 kW units, specially designed for the purpose, each containing one 2.5 kW mercury vapour discharge lamp between two 1.5 kW tungsten filament lamps. Other parts of this building are lighted by fluorescent lamps.

Two of the largest cranes, on rails 50ft above the floor, can each lift 110 tons. The "Whessoe" vacuum treatment vessel (for transformers) is 35ft long by 21ft wide and high internally while the machine tools at the other end of this shop are very large.

In course of fabrication is the stator for one of three 62,400 kVA vertical waterwheel generators for the Los Peares hydro-electric project in Spain. It is 23ft outside diameter and 8ft 8in high with a core length of 5ft 10in. The wound stator will weigh about 100 tons and be shipped in four sections. Each shaft is a solid steel forging 23ft 6in long, of 5ft 10in diameter, weighing 35.5 tons.

Among machines seen in course of manufacture in the turbine factory (over 1,000ft long) are turbo-alternators of 75,000 kW for Barking, a 60,000 kW at 3,000 r.p.m. set for Bankside and a 30,000 kW at 3,000 r.p.m. set for Wigan; one of 20,000 kW for Worcester, South Africa; one of 20,000 kW for Bulawayo, Rhodesia; a 3,500 kW double-extraction set for the Australian Paper Manufacturers, Ltd.; a 5,000 kW set for Trinidad and the compressor casings for two 2,500 kW gas-turbine alternator sets (ordered

Part view of turbine shop in B.T.H. Rugby works, showing 75 MW turbo-alternator for Barking and 20 MW set for South Africa under construction



by Balfour, Beatty & Co., Ltd.) for the power station at Nairobi of the East African Light & Power Co.

A display of electronic control devices had been arranged. The ladies of the party visited the "Mazda" lamp factory and attended a demonstration of "Hotpoint" and "Premier" domestic appliances and "Coldrator" refrigerators, specially arranged for the occasion, before proceeding to luncheon in the dining hall at Coton House.

Coton House, in 120 acres of parkland about 3.5 miles from the works, has been acquired to increase the hostel accommodation hitherto available at "The Laurels" (now reserved for the younger age groups) to permit vacancies to be offered to all apprentices from outside the Rugby area who go to the B.T.H. Co. for training. When completed, the house with a number of self-contained blocks of residential quarters will provide sleeping accommodation for 250 with recreational facilities and a separate dining hall to seat all the residents at one time.

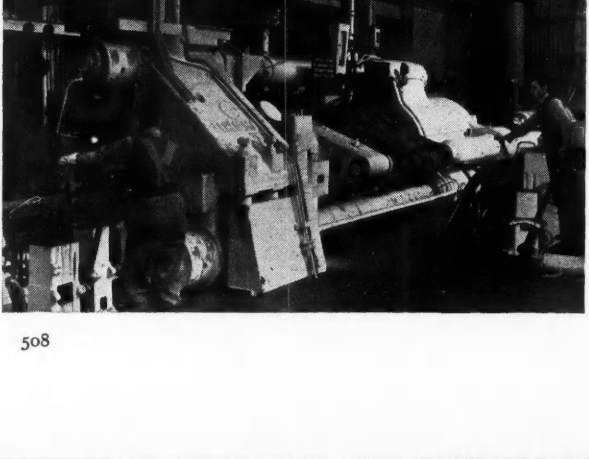
The Friday afternoon return drive was broken for a visit to Warwick Castle and the same evening the party saw "King Lear" performed in the Shakespeare Memorial Theatre at Stratford. Afterwards a limited number went backstage under the guidance of Mr. Patrick Donnell (stage director) to inspect the theatre lighting equipment with which some outstanding results have been obtained, particularly in the production of "Measure for Measure" earlier in this festival season.

The installation is, however, twenty-six years old and the task of the Strand Electric & Engineering Co., Ltd., has been complicated by lack of busbar room and the necessity to balance the load on the d.c. system. The cyclorama has seemed to be under-lit but spot lighting has been much improved and it seems likely that the switchboard system may soon be changed by the provision of an electronic control desk when the electrical installation is modernized.

The Saturday morning journey was to the Banbury works of the Northern Aluminium Co., Ltd., where cast bars from Canada, generally 50 lb "pigs," are melted and alloyed, if necessary, before recasting into slabs for rolling into sheet or into billets for the extrusion presses. A small proportion goes into the manufacture of paste for use in paints. Thus the products are "semi-finished" sheet, strip, bar and tube usually destined for further working by industrial purchasers into marketable commodities.

Coke-fired reverberating furnaces are used to melt the metal for casting semi-continuously or in moulds. The soundness of cast pieces is tested by passing into them from an applied contact a supersonic train of vibrations, which is normally reflected from the opposite surface and picked up by a second contact beside the first. Cracks and flaws, however small, produce a second "echo" which is indicated on an oscilloscope.

For sheet manufacture the ingots are preheated in gas-fired furnaces for the two hot rolling mills; one is a three-roll non-reversing and the other a two-high reversing mill. They



One of four 750 to 5,000 ton air-hydraulic presses for extruding solid or hollow bars in great variety of shapes at the Northern Aluminium Co.'s Banbury works

reduce the ingots to "slab" which is either taken directly to the strip rolling mills, or cut into short lengths for the flat sheet mills. The extensive mill driving installation by the English Electric Co. is a fine example of its kind.

When "Alclad" alloy is required, plates of high-purity aluminium are strapped to each side of the ingot before preheating; hot rolling then welds the plates to the alloy to form a permanent coating.

Reduction of the slab to the finished sheet is done in one of three ways. "Flat sheet" is cold rolled through two-high non-reversing mills (for material not thinner than 0.064in) when a high finish is desired. "Wide strip" (up to 54in) is rolled in length and under tension, being coiled on each side of the mill. This permits quicker reduction to the finished gauge (0.064in, or below) the strip finally being cut into sheets of the required length by an automatic shear. "Narrow strip" (up to 26in) is produced in a similar way to a finished gauge which may be as low as 0.01in.

Heat Treatment

Solid and hollow bars in a great variety of shapes are extruded from four air-hydraulic presses then straightened by stretching. Thin-walled tube is drawn from extruded hollow bar, termed "bloom," on endless-chain-type benches. The mechanical properties of the "strong" alloys are achieved by "solution heat treatment" in which the metal is held at 500 deg C to put the hardening constituent (copper) into "solid solution" in the aluminium. Quenching in water then leaves the metal "supersaturated" and soft; in some alloys the constituents come spontaneously out of solution over a few days to restore full strength and hardness, but in others a further "artificial ageing" at about 170 deg C is needed for precipitation. Salt baths and electric air furnaces are used for solution heat-treatment and air furnaces for ageing, both extensive and important stages in processing.

Production on the 39-acre site began in 1931-32 with 200 employees. Extrusion, formerly done at the company's West Bromwich works since 1928, began at Banbury in mid-1936; later that year the manufacture of aluminium paste was begun in a plant some distance to the east of the main works. Further large extensions were started in 1938 and during the war years monthly production of aircraft sheet and strip was 1,600 tons; extruded sections for aircraft amounted to 1,000 tons monthly. At the peak period over four thousand persons were employed, 30 per cent being women.

Five furnaces of the company's own design were installed in 1940 in a subsidiary factory at Adderbury, a few miles south of Banbury, especially to salvage metal from crashed aircraft. By May, 1941, some 260 tons of metal was being reclaimed monthly. Two extrusion presses, added in 1942, produced 240 tons of sections monthly. Altogether 600 people (half of them women) were employed in these works, which closed in 1944. Between them, Banbury and the Rogerstone works in Monmouthshire produced three-quarters of the nation's wrought aluminium.

There was a dance on the Saturday evening at the Shakespeare Hotel (the headquarters) and on the Sunday there was a 63-mile coach tour of the Cotswolds which afforded glimpses of 66 and 11 kV overhead lines and modern l.v. distribution networks. Luncheon was provided by the Midlands Electricity Board at Farncombe House Country Club, overlooking Broadway and the Vale of Evesham. The party returned to Leamington Spa and Stratford before dispersing on the Sunday evening.

Southend Illuminations

THE illuminations at Southend-on-Sea were switched on by the Mayor on 6th September and will remain in operation until 22nd October. The whole of the shore scheme has been carried out on behalf of the Corporation by the Southend District of the Eastern Electricity Board. There are in use some 15,000yd of strip lighting, 25,000 yd of cable, 23,000 lamps, 650 floods and special trough fittings, and 650 illuminated flowers, the total load being about 750 kW.

The big attraction is the "Never Never Land" in the Shrubbery Gardens, where some twenty main set-pieces have been installed together with illuminated flowers, floodlighting and many other items designed to appeal to young and old alike. Two systems of lighting are employed, namely, incandescent lamps with colour medium for effect; and ultra-violet rays activating fluorescent powders.

VIEWS on the NEWS

By REFLECTOR

THERE was recently a breakdown in the electricity supply in the Purley and Coulsdon district and naturally the consumers wondered what caused it. But, according to a local paper, the "South Eastern Board at Purley declined to give any reason for the breakdown, an official stating that it was not the practice to issue statements on these occasions." If this is true it is about time the practice was introduced, I think. Consumers are entitled to an explanation and if, as the newspaper suggested, the trouble was caused by the severance of a cable during the installation of a new gas main, the Board should have been glad of the opportunity of placing the blame in the right quarter.

★ ★ ★

High-altitude rocket research workers at a naval ordnance laboratory in the United States claim to have confirmed the existence of a "sheet of electric currents 66 miles up," which apparently flows like ocean tides. Motion of the electrical charges in this layer of the upper atmosphere, long accepted in theory as explaining the variation of intensity of received radio waves, may account for the continuous changes in the magnetic field of the earth.

★ ★ ★

The long heralded abandonment of the tramways in South London is about to begin. On Saturday night 93 of the trams and 21 trolley-buses are to be withdrawn and 123 oil buses will take their place. Those who realize that home-produced fuel is thus being replaced by an exotic product will grieve, but they will not regret the passing of the nerve-shattering antiques which are now disappearing. I still believe that trolley-buses might have been substituted but London Transport could not agree that the extra "flexibility" which they would have provided is sufficient in London's traffic conditions. It is to be hoped that the swift and comfortable suburban trolley-bus services will be retained for many more years if only to show foreign customers for these vehicles that we still believe in them.

★ ★ ★

The high standard of design of British domestic electrical appliances owes much to the continued efforts of the Electrical Association for Women. I should think that still better apparatus is likely to be the outcome of the Association's latest enterprise. Questionnaires covering every class of appliances are being distributed throughout the country to women (and men) in all stations of life and from the data forthcoming it is hoped to obtain an idea of how existing equipment falls short of the requirements of the housewife and also what further services electricity can be called upon to perform in the home. It is hoped that the investigations will not be confined only to those connected in some way or other with the electrical industry.

★ ★ ★

From the *Daily Graphic*: "When I was touring in Finland recently I met a Danish stage artist who called himself 'Kenneth.' He was an electrical act. He passes so many thousand volts through his body and lights a flaming torch on his bare leg. But he didn't really want to be an electrical act. He confided to me that he really wanted to train polar bears." Does this mean that he is passing on the torch?

★ ★ ★

It has been the fate of stage electricians to act upon instructions in their control of the lighting and seeing the results "edge-on" from the wings. I am glad to see that they are able to obtain a better idea of what is happening as they manipulate their switches at the New Theatre in St. Martin's Lane, London. There a control box has been set up at the back of the pit with a clear view of the stage. It is reported that a somewhat similar arrangement is being made at the Old Vic which is shortly to "rise from its ashes" after the repair of bomb damage.

OVERSEAS ELECTRICAL TRADE

New Record Achieved in August

ELECTRICAL exports last month rose to the highest level ever reached; the total was £12,388,673, the previous record being £11,816,984 in March last. Reference to Table I will show that the greatest advance as compared with August last year was in the machinery section, although goods and apparatus exports were also substantially greater.

It is noteworthy that although there was a big rise in the case of submarine cables, other classes declined to a great extent. This was attributable largely to lower exports of paper-insulated cables (£325,721 against £801,205). As regards distribution it is seen that Australian purchases of power cables were halved in value and there were also large decreases in the cases of Venezuela, Iran, Egypt, Norway, Russia and the Irish Republic.

There was a considerable improvement in exports of radio equipment, both commercial and domestic. In the former class Malaya (£138,643 against £19,197), Sweden (£183,121 against £52,096) and France (£138,508 against £31,110) were the principal buyers. Egypt was the largest purchaser of domestic sets.

TABLE I.—ELECTRICAL EXPORTS

Class	August, 1950	August, 1949
	£	£
Telegraph and telephone cables and wires (submarine)	473,588	39,336
Ditto, not submarine	715,234	787,969
Wires and cables, cotton, silk or artificial silk insulated	45,307	62,763
Ditto, enamel, glass or asbestos insulated	84,921	77,053
Ditto, paper insulated	325,721	801,205
Ditto, rubber insulated	349,552	357,993
Ditto, other	147,157	86,292
Commercial radio apparatus	818,959	359,432
Domestic radio apparatus	238,902	181,870
Telegraph, telephone and signalling apparatus	1,300,524	1,338,972
Radio loudspeakers	30,761	44,264
Sound reproducing apparatus, components, and parts other than cinematograph apparatus	337,952	198,856
Other sound reproducing apparatus	80,533	57,222
Radio valves and cathode-ray tubes	241,258	162,142
Electric lighting carbons	24,947	8,756
Lamps not exceeding 24 V	38,796	30,279
Discharge lamps	27,459	35,316
Other lamps	81,286	56,162
Other lighting apparatus	290,880	334,759
Primary batteries	95,375	75,326
Parts other than carbons	22,016	7,404
Accumulators for motor vehicles	127,930	119,245
Ditto traction	8,362	10,224
Ditto radio	2,821	3,818
Other portable accumulators	52,290	81,809
All other accumulators	103,502	36,525
Parts and accessories	68,680	84,629
Cooking appliances	135,371	81,139
Heating appliances	43,969	45,884
Parts and accessories for cooking and heating appliances	46,850	33,215
Flat irons	43,081	24,572
Commercial electrical instruments	107,671	98,624
House service meters	111,280	116,088
Time recorders and time switches	21,594	6,205
Other electrical instruments	94,270	85,488
Electro-medical apparatus (not X-ray)	44,131	39,633
X-ray apparatus, tubes and parts	53,431	94,597
Permanent magnets	16,754	10,093
Insulating cloth and tape	58,040	62,148
Other insulating materials	68,852	52,379
Unclassified electrical goods and apparatus	464,464	358,287
TOTAL electrical goods and apparatus	7,443,661	6,547,973
Generators, up to 200 kW	1,229,695	483,367
Ditto, over 200 kW	552,076	367,761
Ditto, parts	245,312	98,421
Motors, railway and tramway	2,106	11,141
Ditto, other, not over ½ h.p.	77,827	50,216
Ditto, over ½ h.p. but under 1 h.p.	32,770	44,742
Ditto, from 1 h.p. to 250 h.p.	448,410	418,022
Ditto, over 250 h.p.	66,076	42,440
Ditto, parts	89,170	77,333
Converting machinery	18,601	14,427
Transformers, including coils	684,029	505,048
Rectifiers for power house use	84,672	32,582
Motor starting and controlling gear	154,084	204,712
Switchgear and switchboards (not telegraph or telephone)	843,199	751,339
Other electrical machinery	40,757	37,544
TOTAL electrical machinery	4,568,784	3,139,095
Vacuum cleaners and parts	200,051	123,533
Other electrically operated portable appliances	93,575	136,963
Portable electric tools	82,602	109,489
GRAND TOTAL	12,388,673	10,057,053

There was a small decline in exports of telegraph and telephone equipment. In this section Portugal (£88,109), Argentina (£68,487) and the Netherlands (£42,341) headed the list, all with substantially increased shares. As regards lighting equipment, Australia purchased the most

TABLE II—DISTRIBUTION OF ELECTRICAL GOODS AND APPARATUS

Destination	Aug. 1950	Aug. 1949
Channel Islands	35,083	31,886
Malta and Gozo	14,317	11,166
Cyprus	10,481	9,215
British West Africa ...	120,088	57,401
Union of South Africa ...	692,672	760,482
Northern Rhodesia ...	33,125	29,976
Southern Rhodesia ...	127,823	139,151
British East Africa ...	160,814	110,757
Bahrein, Koweit, Qatar and Trucial Oman	25,407	63,707
India	710.970	706,155
Pakistan	95,975	96,342
Malaya	379,916	231,136
Ceylon	75,957	60,345
Hong Kong	69,837	258,473
Australia	1,025,726	1,178,114
New Zealand	284,238	310,737
Canada	184,918	94,420
British West Indies ...	60,513	61,098
Anglo-Egyptian Sudan ...	18,678	52,027
Other Commonwealth Countries	56,639	84,464
Irish Republic	211,101	193,543
Soviet Union	17,385	70,399
Finland	64,335	29,007
Sweden	297,034	150,989
Norway	130,814	173,171
Iceland	4,799	21,674
Denmark	124,065	46,281
Poland	36,287	73,412
Germany	37,503	9,369
Netherlands	590.909	120.378
Belgium	72,116	60,970
France	196,877	70,744
Switzerland	23,151	65,252
Portugal	213,105	32,807
Spain	14,168	4,792
Italy	29,369	27,024
Austria	34,297	20,998
Hungary	2,605	34,483
Czechoslovakia	6,354	34,142
Greece	82,880	59,112
Turkey	18,336	52,555
Indonesia*	18,246	29,369
Netherlands Antilles ...	2,371	13,411
Portuguese East Africa ...	18,193	13,542
Syria	6,754	29,797
Lebanon	15,228	20,861
israel	32,884	6,036
Egypt	203,677	148,126
Arabia	9,684	3,457
Iraq	41,449	14,891
Iran	98,972	47,540
Burma	11,705	8,969
Thailand	26,250	21,511
China	392	286
United States of America	58,095	16,437
Mexico	5,408	12,212
Colombia	12,586	3,416
Venezuela	40,750	146,419
Chile	12,888	27,919
Brazil	133,365	68,971
Uruguay	22,627	15,584
Argentine Republic ...	180,650	108,563
Other Foreign Countries	100,820	92,502
TOTAL	7,443,661	6,547,973

* Includes Netherlands New Guinea in 1949.

lamps (£28,460 against £16,883); the outstanding customer for other lighting equipment was South Africa (£65,535 against £26,706). Accumulator exports advanced, in spite of the fact that South Africa reduced purchases from £73,105 to £9,997.

There was a satisfactory advance in shipments of cooking equipment (from £81,139 to £135,371), but exports of heating apparatus fell slightly. Exports of electric irons rose in value (from £24,572 to £43,081) and vacuum cleaners also showed an increase (from £123,533 to £200,051). Australia became the principal customer for heating and cooking equipment, the purchases rising from £35,387 to £73,480; South Africa also increased its imports of this equipment—from £2,536 to £26,411.

Taking electrical goods and apparatus as a whole, Australia was easily the chief market with a share valued at £1,025,726. In the first eight months of the year Australia's purchases amounted to £8,403,641 (against £6,092,386 in January-August, 1949). Next in the August list came India (£710,970) followed by South Africa (£692,672) and the Netherlands (£590,909).

Exports during August of generating plant were well over double those of August, 1949. The bulk of the machines were of ratings up to 200 kW. Russia was the largest buyer of generators; this country's purchases showed a remarkable increase—from £193,895 to £876,850. Next in order came Iran (£96,699), Canada (£93,995—against £7,509) and South Africa (£73,670).

The rise in electric motor exports was not so marked. It may be mentioned that the total for the first eight months of the year was lower than that for the corresponding period of 1949—£5,524,065 compared with £6,724,281. Exports of machines between 1 and 250 h.p., which represented the bulk of the trade, were valued at £448,410. South Africa (£105,458), Australia (£101,204) and India (£73,562) were the principal importers of electric motors. These countries also headed the list of buyers of other heavy machinery, switchgear, etc.

August imports of electrical goods and apparatus were valued at £398,619 (against £286,246). Electrical machinery imports were £71,477 (£69,864).

PERSONAL and SOCIAL

News of Men and Women of the Industry

Mr. J. S. Ramsden, M.I.E.E., has decided to relinquish his seat on the board of the British Thomson-Houston Co., Ltd., on 30th September, after more than forty years' service with the company, fifteen as a director. He is, however, remaining with the company in a consultative capacity, and is retaining his seat on the boards of the British Thomson-Houston Export Co., Ltd., Ferguson, Pailin, Ltd., and the Switchgear Testing Co., Ltd.

Mr. J. S. Ramsden

Mr. Ramsden obtained his early technical education in his native town, Bolton, Lancs, and later at the Manchester School of Technology. He served an apprenticeship as a textile engineer with Dobson & Barlow and gained further practical experience, first with the British Westinghouse Company at Trafford Park and then with the Electric & Ordnance Accessories Co. (Vickers, Ltd.). He joined the B.T.H. drawing office staff in 1910, being transferred to the Supply Department, Rugby, the following year and going to the Manchester district office as power salesman in 1913. He returned to Rugby as chief assistant to Mr. J. A. Phillips, manager of the Supply Department, and in 1919 was appointed manager of the Birmingham district office. In 1923 he again returned to Rugby on being appointed manager of the Supply (subsequently the Industrial Sales) Department. He was elected a director of the company in 1935, being appointed general sales director (plant and apparatus) in 1943.

Since 1932 Mr. Ramsden has been chairman of the Dynamo and Motor Association. In 1934 he was elected a member of the B.E.A.M.A. Council, and was vice-chairman for the 1949-1950 session. He has been chairman of the British Hard Metal Association since its inception in 1939.

Mr. John Oldham, O.B.E., J.P., chairman and joint managing director of Oldham & Son, Ltd., left for the United States on 21st September for discussions with his company's associates there. He sailed in the s.s. *Caronia,* and will be away about two months.

Mr. E. B. Piggott has resigned from the position of secretary of Newman Industries, Ltd., for health reasons. He is succeeded by **Mr. Charles Bush,** who previously held an executive position with Wimpey, Ltd., for a number of years.

Mr. W. D. Fisher, M.I.E.E., of the Southern Electricity Board, retired recently after 46 years with the electricity supply industry. Before nationalization Mr. Fisher was chief engineer of the Wessex Electricity Co. and after vesting day was appointed engineer of the No. 2 (Newbury) Sub-Area.

Mr. W. A. Cooper is shortly taking up the appointment of South Wales area manager for the Simplex Electric Co., Ltd. Mr. Cooper, who was born at Mumbles, nr. Swansea, joined the Metropolitan-Vickers Electrical Co., Ltd., in 1936. After service in H.M. Forces from 1940 to 1946 he returned to Metropolitan-Vickers and became lighting engineer for Wales and the West Country. Mr. Cooper is hon. secretary of the Cardiff Centre of the Illuminating Engineering Society.

Mr. W. A. Cooper

Mr. A. H. Banks, O.B.E., chief labour relations officer of the British Electricity Authority, is relinquishing his appointment at the end of this month on reaching the retiring age. He had a serious breakdown early this year but recovered sufficiently to resume duty during the summer.

Mr. Banks, who was born in Manchester, entered the Manchester Town Clerk's Department 48 years ago. From 1917, he was engaged wholly on industrial relations on behalf of the Corporation and also of an Association of Lancashire and Cheshire Local Authorities. He was appointed employers' secretary to the North Western

District Council and Board for the Electricity Supply Industry in 1918 and in 1923 left the Corporation to become Clerk to the South East Lancashire Electricity Advisory Board established under the Electricity Supply Act, 1919, but remained the secretary of the North Western District Council.

When the South East Lancashire Board was disestablished in 1930 Mr. Banks was appointed employers' secretary to the N.J.I.C. and N.J.B. for the Electricity Supply Industry.

During the 1939-45 war, Mr. Banks acted with Mr. C. J. Hornsby (Electricity Commission) as Joint Secretaries to the Man Power Committee appointed by the Commission, the N.J.I.C. and N.J.B. to deal with problems relating to the balance between the requirements of the industry and the Services. In 1938 he was appointed employers' secretary to the National Joint Committee for Local Authorities and Chief Electrical Engineers which negotiated the terms and conditions of the engineers' salaries. On 1st October, 1947, Mr. Banks was appointed chief labour relations officer to the B.E.A. but retained his appointments in the employers' organizations until vesting date.

Mr. G. W. W. Fone has been appointed secretary of Berry's Electric, Ltd. He succeeds **Mr. W. O. Diggens**, whose health has prevented him from carrying on his work in this capacity. Mr. Fone has been closely connected with Berry's since 1928, both with the company's auditors and subsequently as accountant to the company.

Mr. G. W. W. Fone

Thorn Electrical Industries, Ltd. (Atlas Lighting Division), terminated a successful three-day sales conference with a dinner at the Connaught Rooms on 8th September. Mr. A. Stanley Shier (sales director) was in the chair.

On 19th September the Tunbridge Wells Branch of the **Electrical Contractors' Association** arranged an outing for members. The party travelled by coach to the Ford works, Dagenham, and made a conducted tour of the works. After luncheon at the "Robin Hood," Dagenham, and tea after the tour finished, the party went to a performance of "Latin Quarter" at the Casino Theatre, London, afterwards breaking up into small groups to have supper and return home.

Mr. N. E. Nash has been appointed electrical engineer and manager of the Newcastle (N.S.W.) City Electric Supply Department. He succeeds Mr. Guy Allbut, who has retired after 32 years' service.

WILLS

Mr. E. R. Ireland, for many years on the staff of the Engineering & Lighting Equipment Co., Ltd., St. Albans, who died on 30th May last, aged seventy-one years, left £2,869 gross (£2,805 net).

Mr. C. A. Newton, late governing director of C. A. Newton & Co., Ltd., who died on 27th August, 1949, left £94,923 gross (£62,012 net).

Mr. G. H. Nash, C.B.E., M.I.E.E., a former chairman of the International Marine Radio Co., Ltd., who died on 7th April last, left £12,705 gross (£12,160 net).

Mr. J. F. Avila, A.M.I.E.E., late technical sales representative with the Telegraph Construction and Maintenance Co., Ltd., who died on 1st July last, left £524 gross (£477 net).

Mr. W. G. Richards, for twenty-seven years publicity manager of Marconi's Wireless Telegraph Co., Ltd., left £8,250 gross (£8,195 net).

Mr. C. F. Crymble, A.M.I.E.E., lecturer in electrical engineering at King's College, Newcastle-upon-Tyne, left £3,795 gross (£2,290 net).

Power System Protection

A COURSE of twenty lectures on power system protection has been arranged to take place on Thursdays at the Borough Polytechnic, London, commencing on 5th October. Each lecture will be delivered at 3 p.m. and repeated at 7 p.m. on the same day.

This course is intended for engineers employed in the electricity supply industry and others who wish to become better acquainted with modern practice and techniques in this particular field of activity. The different branches of the subject to be covered include fault calculation, circuit arrangements, current and voltage transformers, design and construction of relays, bus-zone and generator protection. At the end of each lecture there will be an opportunity for discussion.

The lecturers are senior engineers of the B.E.A. together with the heads of departments of various well-known manufacturing concerns. The fee for the complete course is £3 3s, and all applications for admission should be made to the Secretary, Borough Polytechnic, Borough Road, London, S.E.1.

LAMP PUBLICITY

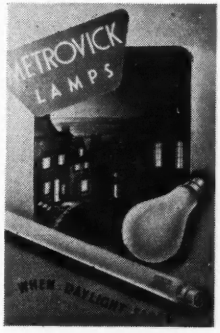
Sales Aids for the 1950-1 *Season*

THIS season's "Osram" lamp publicity campaign of the GENERAL ELECTRIC CO., LTD., with supporting Press advertising, includes much new and attractive material for dealers. The latest window displays are of two types in both of which the central "Osram" symbols are treated with "Dayglow" paint, a new substance which gives a brilliant effect by fluorescing in daylight.

In one design the three "Osram" signs, supported on a dummy fluorescent lamp, are treated with red, yellow and green "Dayglow" paint respectively. The background is of yellow crepe paper. The second display shows a carton which has just opened at a tap from a magician's wand to emit a shower of tungsten and fluorescent lamps. These are shown in white on a yellow background, across which "The Wonderful Lamp" is lettered in black. The large "Osram" sign at the top is treated with red "Dayglow" paint and black lining. One of last year's window displays for small windows has been retained with the cut-out centrepiece in revised colours.

A new coloured cut-out has been designed to accompany this year's displays, one showing four cartons in front of a blue panel on which a lamp appears in white. Last year's cut-out of a carton poised on the apex of a pyramid has been produced in new colours.

A special display unit in cardboard and plastic material has been produced for exhibiting the "Silverlight" lamp in dealers' windows, the plastic being treated with fluorescent material to give a luminous effect. For general advertising an illuminated box type window sign has been produced, with plastic front lettered "Osram the Wonderful Lamp." An advertisement design, illustrating tungsten and fluorescent lamps, is now available as a window showcard in colours. The name and slogans are encircled by red and blue arrows, their heads pointing to the lamps, which stand out in white on the black background. The lettering is in yellow.



"Metrovick" two-plane lamp: howcard printed in seven colours

Having decided to market all types of its lamps under the trade name "Metrovick," the METROPOLITAN-VICKERS ELECTRICAL CO., LTD., has been actively engaged in altering its display publicity to this end and is adopting a distinct and attractive shade of orange as the predominant colour. A pleasing form of the trade name "Metrovick" has been standardized.

The slogan "When Daylight Fades . . ." is being used again in this season's advertising and a two-plane 18in high showcard has been designed to illustrate it, printed in seven colours. Window displays, which average 5ft in overall height and extend up to 7ft, are available on application to the local offices of the company. The display material is supported by extensive trade and general Press advertising.

Publications are available covering all the lighting equipment and lamps marketed by the company. The new lamp catalogue is very comprehensive, including particulars of the new "Metropal" silica-coated lamp, the latest additions to the fluorescent range, and details of cold cathode 9ft 6in lamps. A new edition of the pin-up folder is being published giving prices of the popular ratings used, and the purchase tax applicable can be seen at a glance. Two new publications are now available, an attractive brochure on hospital lighting equipment, and a catalogue containing details of all types of tungsten lamp fittings

New "Osram Silverlight" display unit

for commercial use. A transport fittings catalogue is in preparation covering ship and train lighting.

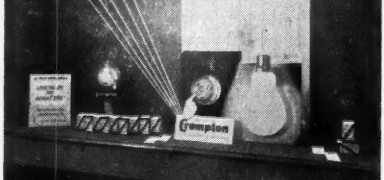
Part of a vigorous campaign shortly to be launched by EKCO-ENSIGN, LTD., is the distribution to the trade of a new and attractive series of five cut-outs. Both drawings and photographic treatment are used to produce a bright, human and eye-catching group of showcards useful for display on walls or counter. All feature the tungsten filament lamp with a reference in three of them to "Ekco" fluorescent lighting.

One of the new Ekco-Ensign cut-outs for the autumn lamp campaign

One intricate cut-out displays a selection from the very comprehensive range of filament lamps available, including the striplite, candle and tubular varieties. These cards are produced in 9- and 10-colour photolitho, mounted on strong board, with strut and hanger.

Keynote of the lamp advertising campaign being launched by CROMPTON PARKINSON, LTD., is the new slogan: "Switch to Crompton and you're on to a good lamp!" Press advertising programme includes the leading national and provincial daily and evening newspapers, periodicals, trade and technical journals, while "Looking on the Bright Side," the first "Technicolor" cartoon film shown publicly for lamp advertising, will be seen by five and a half million people in cinemas throughout the United Kingdom.

Typical Crompton display showing coloured cut-outs, etc.



For lamp stockists full-colour cut-outs for window and counter, and window transfers are available. An expert window dressing service will be provided free. Crompton lamps are being supplied in a new carton, which besides showing the cap and bulb end, cushions the lamps against transit shocks.

There are also an attractive six-page folder, a 24-page price list and a price card for hanging in a shop. For the first time since 1939 the 36-page pocket manual specially compiled for shop assistants is being re-issued.

South African Notes

From Our Cape Town Correspondent

THE South African Standards Council has published safety specifications for a wide range of domestic electrical equipment, including hand irons and washing machines, stoves and lampholders. It has been recommended to the Minister of Economic Affairs that conformity with the specifications should be made compulsory.

A further increase in the demand for electric cable is reported by Aberdare Cables of S.A., Port Elizabeth, who are expanding their export trade in spite of competition from overseas manufacturers. Production is steady and good supplies of raw materials are being obtained.

An electric washing machine being made at a Cape Town factory has an octagonal porcelain enamelled pressed-steel tub which it is claimed gives improved turbulence. Except for the electric motor all the materials are of South African origin.

Electrical accessories, the present range including non-inflammable lampshades, cord-grip lampholders, 15 A 3-pin plug tops, batten holders and 5 A 2-pin plug tops, are now being manufactured by a recently established firm in Johannesburg. Further lines, such as 5 A 3-pin plug tops, iron connectors, 5 A flush switches (single and double units), plastic switch plates and coloured fancy shades, are being prepared for future production.

A distribution station under construction at Alma, to the north-west of Welkom, is expected to be the largest in Southern Africa. It is designed as the main electricity supply centre for the Orange Free State goldfields. Ultimately there will be two other stations, near Wit Extensions and Virginia. The 88 kV supply from the Vaal power station will be stepped down to 40 kV at which power will be supplied to the mine substations along the ring feeder system. When the Vierfontein power station is completed in 1953 five additional 132 kV transmission lines will feed into the substation.

I.E.E. SECTION CHAIRMEN

Officers for the 1950-51 *Session*

WE have already given the names of the chairmen of the Sections of the Institution of Electrical Engineers for the 1950-51 session. We now publish brief biographical notes of the new chairmen, together with their portraits.

Mr. S. E. Goodall, M.Sc.(Eng.), chairman of the Supply Section, was educated at Queen Mary College, University of London, where he obtained his B.Sc. (Eng.) degree with honours in 1924, and M.Sc. (Eng.) in 1928. From 1924 to 1928 he served in the Apparatus Department of Siemens Bros. & Co., Ltd., Woolwich, after which he was in the Research Department of the Metropolitan-Vickers Electrical Co., Ltd. Mr. Goodall joined W. T. Henley's Telegraph Works Co., Ltd., in 1944, as assistant chief engineer and was appointed chief engineer in 1946. He was a member of the Council of the I.E.E. from 1941 to 1944, and has served again from 1948 to date. He has also served on various I.E.E. Committees and is chairman of the Electrical Engineering Regional Advisory Committee of the London & Home Counties Regional Advisory Council for Higher Technological Education.

Mr. A. N. Irens, D.F.H., A.F.R.Ae.S., M.Amer.I.E.E. (Utilization Section), is chief electrical engineer of the Bristol Aeroplane Co. He was born in India and received his education at Blundell's and Faraday House. He served as a college apprentice with the Metropolitan-Vickers Electrical Co., Ltd., and in 1933 he joined the General Electric Co., Ltd., as sales engineer in Leeds and later in Manchester. Mr. Irens joined the Bristol Aeroplane Co. in 1939 as deputy chief electrical engineer and became chief electrical engineer in 1943. He is a part-time member of the South Western Electricity Board, and in addition to his duties with the Bristol Aeroplane Co., he carries on a consulting practice in his own name.

Capt. C. F. Booth, O.B.E. (Radio Section) received his early training at the Technical College, Lincoln, and as an apprentice with Ruston & Hornsby, Lincoln. He entered the Radio Branch of the Post Office in 1923 and joined the staff of the development laboratory. Since that time he has been concerned with most aspects of radio development and from 1948 has been in charge of the Radio Development Laboratory with headquarters at Dollis Hill. His particular contributions to radio development have been concerned with frequency standards and measurement, quartz clocks, and with the application of piezo-electric crystal units to frequency selection and control. He has contributed several papers on these subjects to the I.E.E. and to other bodies and he received the Duddell Premium in 1935 for a joint paper on "Crystal Oscillators for Radio Transmitters," and the Institution Premium in 1941 for his paper on "The Application and Use of Quartz Crystals in Telecommunications." He also received the Senior Silver Medal of the Institution of Post Office Electrical Engineers in 1947 for his joint paper on "Piezo-electric Quartz and its use in Telecommunications." Capt. Booth led the United Kingdom Delegation to the fifth meeting of the C.C.I.R. held in Stockholm in 1948.

Mr. G. A. V. Sowter, Ph.D., B.Sc. (Eng.) (Lond.), chairman of the Measurements Section, has been with the Telegraph Construction & Maintenance Co., Ltd., since 1922 and apart from his present post of manager of the Metals Division is a director of two subsidiary companies, Trans-

Mr. A. N. Irens

Capt. C. F. Booth

Mr. S. E. Goodall

Dr. G. A. V. Sowter

former Steels, Ltd., and Telcon Magnetic Cores, Ltd. He is also alternate director of Temco, Ltd., Lydbrook.

Dr. Sowter took his B.Sc.Eng. (Lond.), degree in 1922 and gained the Electrical Engineering Diploma of the Northampton Engineering Day College at the same time. He obtained his Ph.D. in 1944 as a result of a thesis on "Harmonic Distortion in Transformers and Chokes with Nickel Iron Cores." For many years he has been associated with the production and applications of Mumetal, Radiometal and other high permeability alloys and has also carried out research work on submarine cables, terminal apparatus and acoustics. For some time he was chief assistant to Dr. N. W. McLachlan and was joint author with him of papers published in the *Philosophical Magazine*. He has also written a number of articles in the technical Press and for some years held the post of senior lecturer (evenings) in radio communication at the Borough Polytechnic. Apart from his professional work, Dr. Sowter has been largely concerned with social functions at the I.E.E. and for many years he has been chairman of the Telcon Social and Athletic Club.

THE MANGAKINO (NEW ZEALAND) HYDRO-ELECTRIC DEVELOPMENT

Work in progress on the Waikato River hydro-electric development near Mangakino. (1) Mouth of diversion tunnel wired for blasting. (2) Flow from diversion tunnel after explosion. (3) Diversion tunnel; cofferdam not yet closed. (4) Housings for concrete spillway; across the river is the site of the projected power-house

Commerce and Industry

Non-flameproof Mining Gear

Testing Appliances for America

THE use of non-flameproof apparatus below ground in mines is the subject of Information Bulletin No. EE(50)4 issued by the Production Dept. of the National Coal Board. An appendix shows that the cost of non-flameproof motors, haulage control gear and lighting fittings is usually less than that of their flameproof equivalents. The difference as at July, 1950, ranged from 15 to 110 per cent in the case of control gear and from 22 to 56 per cent in that of motors. The object of the bulletin is to emphasize the considerable monetary saving that can be made by using non-flameproof apparatus wherever it is legally possible to do so. It is illogical to install a mixture of the two classes of gear in the same situation. Equipment stamped with the Buxton certificate mark should be reserved for employment in positions where flameproofness is demanded by the Mining Regulations.

Engineers' Wages

Discussions on wages were resumed on 20th September between representatives of the Engineering and Allied Employers' National Federation and the Federation of Shipbuilding and Engineering Unions. Later it was stated that "certain proposals" had been put forward by the employers and negotiations had been deferred until 2nd October to enable the parties to consult their constituents.

Welding Team Visits U.S.

A specialist team on welding left England in the *Caronia* on 21st September for a six weeks' tour in the United States. The team of eighteen, representing a wide range of industries, is the largest specialist team so far sent to America under the auspices of the Anglo-American Council on Productivity, with Marshall Aid. The leader is Dr. H. G. Taylor, Director of Research, British Welding Research Association, and among the other members are Messrs. E. F. Newell (B.E.A.M.A.), H. E. Lardge (Joseph Lucas, Ltd.), S. H. Griffiths (John Thompson, Ltd.), J. A. Edwards (Davey, Paxman & Co., Ltd.), J. A. Dorrat (Richardsons, Westgarth & Co., Ltd.), W. H. Rimmer (B.E.A. Clarence Dock power station), and S. M. Reisser (Murex Welding Processes, Ltd.).

Electrical Goods for America

It was decided some months ago that the Underwriters' Laboratories, Inc., of Chicago, should appoint representatives in this country to test electrical goods destined for the United States. Nothing has yet come of this but there is still a possibility that agreement will be reached in the matter. In the meantime it is necessary for British suppliers of electrical goods to get into touch with the Underwriters' Laboratories in connection with the testing of these goods before sending them to the United States. The addresses of the Laboratories are: 207, East Ohio Street, Chicago, 2; 161, 6th Avenue, New York, 13; and 500, Sansome Street, San Francisco, 2.

Cable for Egypt

Among recent consignments of cable dispatched from the Telcon Works of the Telegraph Construction & Maintenance Co., Ltd., was one of e.h.v. power cable for the

Consignment of "Telcon" cable for the Egyptian Government

Cairo Electricity and Gas Administration of the Egyptian Government. In the accompanying photograph the cable drums are shown being loaded into a barge at Greenwich.

B.I.F. Electrical Exhibitors

The meeting of electrical exhibitors in the Birmingham Section of the British Industries Fair called for 1st November has been postponed until 8th November. It will be held at the Chamber of Commerce, 95, New Street, Birmingham, commencing at 2.30 p.m.

Cable Makers' Film Show

Enfield Cables, Ltd., arranged an exhibition of three films in London on 22nd September. They were "Water Power, Eternal Power," illustrating some phases of hydro-electric work in Switzerland; "380 kV Transmission Line," showing the construction of a system in Sweden to carry power from the Arctic north to the south of the country; and "Shipshaw," a film portraying the construction of the "Shipshaw 2" hydro-electric station at Arvida, Quebec, which serves the world's largest aluminium plant.

It was announced at the gathering that the British Electricity Authority had ordered from the company a 100 kW wind-driven generator (Andreau system) for erection in West Wales during 1952. The machine will have a three-bladed aluminium propeller made by de Havilland Propellers, Ltd., with an overall diameter of sweep of about 79ft. It will run at a mean speed of 106 r.p.m. with a normal wind speed of 28.6 m.p.h. Reference was also made to three 132-kV gas compression cables being made for the B.E.A. and an experimental length of 220 kV self-contained compression cable made and installed for Electricité de France.

Ore Separation Plant

The Fraser & Chalmers Engineering Works of the General Electric Co., Ltd., has received an order for a 100 tons/hr heavy-media separation plant for treating manganese ore in West Africa.

"The World To-day"

This is the general title of a series of fifteen lunch-hour lectures arranged by the Institute of Export through October to January at the Conway Hall, Red Lion Square, Holborn, London, W.C.1. Each lecture will deal with conditions in a specific country and will be given by commercial diplomats. The first, on 3rd October, is to be given by Mr. R. P. Bower, Commercial Secretary to the High Commissioner for Canada. Tickets are obtainable from the General Secretary, Institute of Transport, 140, Cromwell Road, London, S.W.7; they are free to members and students of the Institute and the charge to non-members for the whole series is 5s 6d.

Cooker Window Display

To gauge their relative "pulling power," two new "Creda" cooker displays have been arranged in Birmingham at the Simplex Electric Co.'s showrooms in Easy Row and the Midland Electricity Board Service Centre in Paradise Street — about 50 yards apart. The display in the M.E.B.'s premises consists of full-size cut-out figures of a mother and child, and a large display unit with mounted photographs illustrating various features of the cooker. In the Simplex showrooms there is a triple-coloured background with a striking name-board and caption panels detailing the main features of the

"Creda" cooker display at the M.E.B. Service Centre

cooker. On the conclusions reached from watching the reactions of the public will be decided whether one or the other of the displays will be ordered in quantity.

Wash-boilers in Catering Establishments

Having had difficulty in maintaining supplies of boiling water in a number of their tea shops because of the reduced gas pressure in many districts, J. Lyons & Co., Ltd., have decided to extend the use of electrical equipment, and a considerable number of "Creda" C.80 wash-boilers are now being installed.

"Wireless World" Diary

The 1951 *Wireless World* diary is now obtainable from the publishers, Iliffe & Sons, Ltd., Dorset House, Stamford Street, London, S.E.1 (morocco leather 5s 6d.; "Rexine" 3s 8d). As usual, it contains a great deal of useful technical information compiled by the staff of the *Wireless World*, particulars of regulations affecting the radio user (including a page on the new Wireless Telegraphy Act) and details of radio organizations, etc.

Contract Price Adjustment Formulae

The latest figures for use in the B.E.A.M.A. contract price adjustment formulæ are as follows: "Rates of Pay": the rate of pay for adult males at 9th September shall be deemed to be 115s (unchanged). "Costs of Material": the latest figure for intermediate products published by the Board of Trade (9th September) is 295.6—the figure for August (against 287.8 for July).

Electricity in Modern Buildings

In connection with the Ministry of Works' Building Week Exhibition at Leeds, from 11th to 16th September, the Yorkshire Electricity Board provided a stand showing the contribution which electricity makes to modern buildings of all types. The stand, which occupied a prominent position, carried displays illustrating an all-electric kitchen, water-heating installation methods, and how electricity is brought from the source to the consumer. Another section outlined the comprehensive service which is made available to all consumers, in particular the larger users in commerce and industry. The exhibition was opened by the Minister of Works (Mr. R. R. Stokes), who during his tour paid a visit to the Yorkshire Board's stand. The Minister was accompanied by the Lord Mayor and Lady Mayoress of Leeds (Ald. and Mrs. F. H. O'Donnell, J.P.) who were received by Mr. F. Nicholls, manager, No. 4 Sub-Area, (Leeds).

Mr. F. Nicholls with the Lord Mayor and Lady Mayoress of Leeds at the Y.E.B. stand

Works "Open Day"

Following the successful "Open Day" which the Igranic Electric Co., Ltd., held last year, when over 5,000 visitors were entertained at the company's Bedford works, a similar event is being held on Saturday, 7th October. The programme includes a tour of the works lasting about two hours. Along the route many machines will be operating and processes demonstrated.

Change of Address

The area offices of the Ministry of Fuel and Power Electricity Division at Bath have been moved to Flowers Hill, Brislington, Bristol, 4 (telephone: Bristol 75341). Mr. R. Chadwick, A.M.I.E.E., has succeeded Mr. N. Wimpenny, A.M.I.E.E., as area meter examiner.

Explosives in Mines

After conducting the formal inquiry into the explosion at the William Colliery, Whitehaven, in 1947, the Chief Inspector of Mines made some recommendations relating to shot-firing underground in coal mines. Instead of further amending the Explosives in Coal Mines Order accordingly, the Minister of Fuel and Power set up a committee of five representatives of differ-

ent sections of the industry, with Mr. A. M. Bryan (Chief Inspector) as chairman, to review the whole subject afresh.

The Committee's report (H.M. Stationery Office, price 1s 6d.) is now published under the title of "Safety in the Use of Explosives in Coal Mines." It contains many recommendations of a general character and also a draft outline of an entirely new Explosives in Coal Mines Order which, the Committee suggests, should be supplemented by a Code of Good Practice. The requirements outlined relate, among other things, to types of electrical detonators for shot-firing and connecting wires; their cleaning, overhaul, maintenance and testing; methods of storage and issue; and design of carrying case.

Post-Graduate Training Course

At the New Southgate Works of Standard Telephones and Cables, Ltd., 28 university graduates and technical college students have just commenced a special training course, the fourth since the commencement of the present company's post-graduate training scheme. The course lasts a full year and is designed to provide opportunities for candidates to relate their theoretical and practical training to the whole broad field of activities within the Standard organisation, and to prepare them for the specialized duties to which they will later be assigned. The graduates were welcomed by Sir Thomas Spencer, managing director of the company, at a luncheon held at New Southgate to initiate the course.

Wholesalers' Enterprise

An exhibition of a somewhat unusual character was arranged at the Savoy Hotel, London, last week by the British Central Electric Co., Ltd. (which is a wholesale concern) when it got together displays by itself and five manufacturers. Its own exhibits comprised examples of "Gripper" handlamps, a full-load earth tester, precision drills, flexible conduit, p.f. correction equipment, etc. The other participants were Barlow-Whitney, Ltd. (electrically heated glue-pots, solder-pots, soldering iron and a small industrial oven); Channel Conduits (1949), Ltd. (specimens of its rust-proof standard conduit with snap-on covers); the Electric Construction Co., Ltd. (a.c. motors and "Varispeed" drives, one in operation with a metal-plate rectifier); Wm. Sanders & Co. (Wednesbury), Ltd. (examples of porcelain h.r.c. fuses, rubber plugs, "Super Sandospeed" fuseboards and switches, etc.); and Wolf Electric Tools, Ltd. (a fairly comprehensive selection of electrically operated tools).

The exhibition attracted a large number of people from all parts of the country and each visitor was given notes on the history and products of the companies represented.

Domestic Appliance Questionnaire

Distribution has just been commenced by the Electrical Association for Women of a questionnaire which seeks to discover what improvements the housewife would like in her domestic electrical appliances and also in what other ways she considers electricity might assist her in her home. The questionnaire, which takes the form of a 20-page booklet entitled "Towards Perfection," will in the first place go to the E.A.W.'s 106 branches, but other organizations and individuals who are interested can obtain copies from the E.A.W. Headquarters, 35, Grosvenor Place, London, S.W.1. It is hoped that the opinions thus obtained from all classes of family, besides facilitating the production of new and improved types of apparatus, will bring to light valuable information regarding preferences and habits in the use of electrical equipment.

Trade Announcements

Bill Switchgear, Ltd., have opened an area office and stores, in charge of Mr. H. H. Pollard, area manager, at 58, Wood Street, Manchester, where a complete range of "Bill" switch and fuse-gear is stocked. The telephone number of the company's works at Birmingham is now Birchfields 6001.

The **Stanor Electric Co.** has moved to 68, Hackney Road, London, E.2 (telephone: Shoreditch 6135).

Catalogues and Lists

Young & Wildsmith, Ltd., 35, Little Russell Street, London, W.C.1.—A comprehensive priced and illustrated catalogue of installation materials and accessories, lighting fittings and domestic appliances.

Runbaken Electrical Products, 71-73a, Oxford Road, Manchester, 1.—Illustrated leaflet describing a portable earth analyzer.

Elcontrol, Ltd., 10, Wyndham Place, London, W.1.—Pamphlet illustrating and describing the company's electronic control arrangements for gas and oil furnaces.

Rheostatic Co., Ltd., Slough, Bucks.—A comprehensive illustrated catalogue of Satchwell temperature control equipment for room-heating, air conditioning, central heating, cookers, water heaters, etc.

Telegraph Construction & Maintenance Co., Ltd., 22, Old Broad Street, London, E.C.2.—Publication No. 11—1950 dealing with "Telcon" cables for radio frequencies, with illustrations and specifications.

FINANCIAL SECTION

Company Notes and Stock Exchange Activities

REPORTS AND DIVIDENDS

Scophony-Baird, Ltd., reports a loss of £54,547 for 1949-50; last year there was a loss of £13,488. The writing-down of goodwill, patents, etc., increases the deficit to £80,100. The chairman, Lt.-Gen. Sir Charles King, states that arrangements are in hand for securing more finance.

Ferranti, Ltd., in a preliminary statement, reports a group profit, after all charges, including taxation, of £248,100 for the year ended 30th June last as compared with £133,027 for the preceding year, all of which is attributable to the holding company. United Kingdom taxation absorbed £297,000. General reserve receives £200,000 and it is proposed to pay an ordinary dividend for the year of 6 per cent less tax on £500,000 capital (against 6 per cent tax free on £300,000 capital).

A. C. Cossor, Ltd., are deferring payment of accrued dividends on the 6 per cent preference shares until the current year's trading results are available.

The Marconi International Marine Communication Co., Ltd., has again declared an interim dividend of 2½ per cent.

Associated British Engineering, Ltd., has declared an interim dividend of 8 per cent on capital increased by a 25 per cent share bonus. Last year's interim was 6 per cent.

W. T. Henley's Telegraph Works Co., Ltd., has declared an interim dividend on the ordinary stock of 5 per cent, less tax (unchanged).

NEW COMPANIES

Sontranic, Ltd.—Registered 18th August. Capital £1,000. Manufacturers of electrical apparatus, thermionic instruments, wireless transmitting and receiving equipment, television apparatus, etc. Directors: C. Croxson and Mrs. G. Croxson. Regd. office: 64, Millbank, S.W.1.

Mobile Electric Services, Ltd.—Registered 5th September. Capital £1,000. Manufacturers, importers, exporters and factors of electrical and other instruments, etc. Subscribers: Margaret Drewett and Anne Gallacher. Regd. office: 99, Douglas Street, Glasgow, C.2.

Electro-Voice Products, Ltd.—Registered 6th September. Capital £1,000. Manufacturers of transformers, acoustical and electronic equipment; electrical engineers and contractors, etc. Directors: K. Jones and Vera G. Jones. Regd. office: 137, Harrowdene Road, North Wembley, Middx.

Scottish Radio Danns, Ltd.—Registered in Edinburgh 1st September. Capital £10,000. Wholesale and general warehousemen of all classes of electrical, radio and television equipment, etc. Directors: J. P. Christie, F. M. Middleton, G. D. Gearing, A. Gordon, and W. Wilson. Regd. office: 11, Sinclair Road, Aberdeen.

County Electronics, Ltd.—Registered 5th September. Capital £5,000. Designers and manufacturers of and dealers in television and wireless transmitting and receiving sets, etc. Directors: J. Derham and H. Marshall. Regd. office: 17, Stramongate, Kendal.

Escos Engineering Co., Ltd.—Registered 9th September. Capital £1,000. Electrical engineers and contractors, etc. Directors: M. Kon and P. C. Smith. Regd. office: 38a, King's Road, Chelsea, S.W.3.

LIQUIDATIONS

Caersws Electric Supply Co., Ltd.—Meetings of members and creditors on 23rd October at 51-52, Broad Street, Newtown, Montgomeryshire, to receive an account of the winding-up by the liquidator, Mr. D. R. Morgan.

Cape Electric Tramways, Ltd.—Members' voluntary winding-up. Meeting of members on 17th October at 4, London Wall Buildings, Blomfield Street, London, E.C.2, to receive an account of the winding-up by the liquidator, Mr. F. J. Pullen.

Generator & Stud Welding Co., Ltd.—First meetings 29th September at Room 401, 4th Floor, Inveresk House, 346, Strand, London, W.C.2.

BANKRUPTCIES

J. F. Draper, 15, Cumberland Road, Acton, W.3, lately carrying on business at 230, Horn Lane, Acton, W.3, electrician.—Trustee, Mr. C. T. Newman, 3, Central Buildings, Matthew Parker Street, Westminster, S.W.1, released 28th August, 1950.

FINANCIAL SECTION

STOCKS and SHARES

ASSURANCE of practically full order books, and of full employment for some time to come, is now regarded as a material prop to the confidence which investment continues to maintain in the shares of industrial companies. No heed at present is paid to the probability of fresh taxation being announced in the spring. There seems to be plenty of money available for investment. New issues in the best-class order find no difficulty in securing over-subscription. One of to-day's features is the readiness of investment to place money into shares of companies that are not likely to increase their dividend for the time being, but hold out a promise of expansion of return when the outlook becomes less clouded. Amongst electrical equipment shares which have participated in the strength of the past few days are Johnson & Phillips, now 61s 3d, Henley's 23s 6d, B.I. Callender's 33s 6d, Automatic Telephone 60s, and Lancashire Dynamo 96s 3d.

The Rising Tide

Other advances during the past few days are well distributed over the various sections. Crabtree 38s, London Electric Wire 48s 9d, Tube Investments 6$\frac{5}{16}$, Telephone Properties 21s 3d, and British Aluminium 45s, are among those which stand out with noticeable advances. Elsewhere, the Indian shares are better, Cawnpore rising to 51s 3d, Calcutta Electric to 24s, and Calcutta Trams to 29s. De La Rue have risen to 24s 9d. Mather & Platt 40s 9d and Telephone Rentals 11s 9d, are also better. Perak Hydro-Electric at 11s are 1s 6d higher on the impression that matters are settling down in the Malay Peninsula. British Electric Traction, 475, are 10 points to the good, and a number of rises make the price lists, as compared with those of a week ago, distinctly cheerful reading.

Reports and Dividends

Vickers put on a florin, at 34s 3d, before reacting to 33s 9d. The company has raised its interim dividend by 10s, to 2$\frac{1}{2}$ per cent. Ferranti, Ltd., publishes remarkable figures. The profit of £248,000 is £115,000 up. The ordinary shares are privately held. The 7 per cent preference are dealt in on the Stock Exchange and stand at 28s. Cossor hold their rise to 10s 6d: consideration of a payment on the preference shares —the dividend is now 2$\frac{1}{2}$ years in arrears— has been postponed until the current year's results to 31st March next are known. Scophony Baird are about eighteen pence. The preliminary figures for the year ended last March report a loss of £54,547. This raises the overall loss to £80,000. The balance-sheet should be out in a few weeks' time.

Steel Bill Influences

Securities with a market value of some £300 million are involved in the Iron and Steel Act. Unless something unexpected happens between now and January, they will be exchanged in due course for a Government Steel Stock on which the yield will presumably be around the 3$\frac{1}{2}$ per cent mark. Apart from income considerations, it is a fair assumption that many people who hold steel shares will not be content to have them replaced by a Government stock. Reinvestment operations on a fairly large scale are consequently expected. Recent strength in other markets is taken to indicate that the take-over is already being anticipated by some people, despite the fact that market prices are still below the estimated compensation figures.

Alternatives to Steel

Dispossessed holders of steel shares are thought likely to put the electrical equipment market among their first considerations in seeking alternative industrials. The nature of the industry is calculated to make an appropriate appeal for the purpose, and the market offers a wide range of securities and yield. From the austere 4 per cent, more or less, available, for instance, from A.E.I., B.I.C., and English Electric, returns range upwards through 4$\frac{1}{2}$ per cent from Cromptons, Crabtrees and British Thermostats to around 5 per cent from Electric Constructions, Westinghouse Brake, Johnson & Phillips and Telephone & General; up to 6 per cent or more from Switchgear & Cowans, Hall Telephone, Revo and Reliance-Clifton; thence to 7 per cent upward on Aron, Brush, Strand Electric and Aberdare Cables; and so up to double figures from, for instance, Morphy-Richards, Aerialite, General Cables and J. F. Stone.

Gilt-edged Firmness

After minor fluctuations during the past week, gilt-edged security prices show very little change, and consequently maintain a position at about the best levels of the year. The new 3$\frac{1}{2}$ per cent Electricity Stock stands at 103$\frac{1}{2}$, and the two 3 per cent stocks at 96$\frac{1}{2}$ for the 1967-73 issue, and 95$\frac{5}{8}$ for the 1974-77 issue.

Street Lighting Code

Criticisms and Suggestions by A.P.L.E. Delegates

AT the annual Conference of the Association of Public Lighting Engineers in Bournemouth last week, Dr. J. W. T. Walsh introduced for discussion the Draft Code of Practice for street lighting in Class "A" roads prepared by a Joint Committee of the Institution of Electrical Engineers and the British Standards Institution. He said he did so as a representative of the Drafting Committee. He briefly outlined the circumstances which led to the preparation of the Code of Practice in preference to a specification—which he said had been found, for all practical purposes, impossible to devise.

The Code was based on the Report of the Ministry of Transport Departmental Committee which was published in 1937, the implementation of which was prevented by the war. The part which gave the Drafting Committee the greatest trouble was that which dealt with light distribution. He emphasized that in the past lighting engineers had referred to different kinds of distribution by different names and this caused difficulties, especially when dealing with non-cut-off installations. The Committee, with the object of clearing up the position, suggested that non-cut-off installations should be divided into two, viz., high-angle beam and medium-angle beam, although it was admitted that even this did not completely cover the situation. Dr. Walsh briefly mentioned the other sections and asked for comments.

Members' Views

Mr. J. G. Holmes (Holophane, Ltd.) said that the Code was greatly needed because something more elaborate, more informative and less definitive than the Departmental Committee's Report of 1937 was necessary. The three most important items in designing a lighting installation were: (1) to put the lanterns in the right position; (2) to choose the best distribution of light; and (3) to choose the most appropriate colour and quantity of light. He criticized the clauses of the Code dealing with the distribution of intensity.

Mr. C. R. Bicknell (Siemens Electric Lamps & Supplies, Ltd.), criticized the suggestions for reducing the spacing between lamps as it would have the effect of increasing the cost by 20 per cent. There were many excellent examples of 150ft spacings and he saw no reason to reduce that to 120ft, as suggested.

Mr. R. R. H. Matthews (North Western Electricity Board) disagreed with the suggestion that it was not necessary to include in the Code definitions of terms in common use among lighting engineers.

In referring to the question of lighting hours, Mr. L. Robinson (North Western Electricity Board) said that in his area there were eight different "lighting hours" and some recommendation in this respect would be welcome. He also referred to the cabling between the terminal at the base of the pole and the lantern and said that there were tremendous temperature differences in a lamp column and crystallization often took place.

Mr. C. C. Smith (Liverpool) asked for a clear definition of high-angle and medium-angle beams and suggested there might be a third definition, that of a low-angle beam. While the directional intensity ratio might indicate the degree of glare in high-angle beam lanterns, he did not think it showed how little glare there was with a cut-off lantern.

Mr. R. Parker (Aberdeen) thought more attention should have been given in the Code to the lighting of service roads.

Mr. J. M. Waldram (G.E.C.) recalled that in the Departmental Committee's Report of 1937 the central mounting of lamps was deprecated for several reasons, but with recent developments some of those reasons were not now valid and there was a tendency for this form of lighting to be extended. His view was that it should not be extended.

Dr. Walsh briefly commented on the discussion and said the Drafting Committee would consider all the suggestions and criticisms that had been made.

CONTRACT INFORMATION

Accepted Tenders and Prospective Electrical Work

CONTRACTS OPEN

Where "Contracts Open" are advertised in our "Official Notices" section, the date of the issue is given in parentheses.

Australia.—25th October. Queensland State Electricity Commission. H.d. bare copper cables. (C.R.E. (I.B.) 64902/50.)* 25th October. 22 kV air break switches and earth leakage protection equipment for substations. (C.R.E. (I.B.) 64903/50. Ten/1655.)* 1st November. Jointing sleeves, switchgear, fuses, lightning arresters and line construction material. (C.R.E. (I.B.) 64906/50.)* 29th November. Two 18,000 kW water-driven turbo-alternators. (C.R.E. (I.B.) 64303/50. Ten/1621.)* 13th December. Transformers for Tully Falls Hydro-Electric Scheme. (C.R.E. (I.B.) 64904/50. Ten/1653.)*

Belfast.—13th October. Electricity Department. Water screening plant. (See 22nd September issue.)

Bournemouth.—11th October. Corporation. Vehicle actuated traffic signals. (See 22nd September issue.)

New Zealand.—14th November. State Hydro-Electric Department. 110 kV switchgear and steelwork for Kineith substation. (C.R.E. (I.B.) 64454/50. Ten/1631.)* 28th November. 50 kV outdoor switchgear and steelwork for Gisborne substation. (C.R.E. (I.B.) 64455/50. Ten/1632.)*

24th October. Post and Telegraph Department, Wellington. 250 miles of 70 lb/mile cadmium-copper P.B.J. wire. (C.R.E. (I.B.) 64976/50.)*

Portuguese West Africa.—No date. Supply and erection of transmission line between Mabubas hydro-electric station and Luanda substation. (C.R.E. (I.B.) 62304/50.)*

Southern Rhodesia.—6th November. Electricity Supply Commission. Eight transformers 1,000 to 5,000 kVA, 66/11 kV and 66/33 kV. (C.R.E. (I.B.) 64994/50.)*

Southport.—16th October. Lighting Department. Installation of Class "A" lighting in certain roads. (See this issue.)

Uruguay.—23rd October. Usinas Electricas y Telefonos del Estado. Underground armoured cable for 15,000 V and complementary material. (C.R.E. (I.B.) 64355/50. Ten/1639.)*

17th January. Equipment for the extension of the Jose Batlle y Ordonez central thermo-electric power station. (C.R.E. (I.B.) 60735/50. Ten/1625.)*

Wortley.—10th October. Trunk road lighting installation. (See this issue.)

*Specifications may be inspected at the Commercial Relations and Exports Department, Board of Trade, Thames House North, Millbank, S.W.1 (Victoria 9040).

CONTRACTS IN PROSPECT

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Acton.—Science block (£683,700) for Acton Technical College; county architect, 10, Great George Street, S.W.1.

Carlisle.—Factory Buildings at Shaddongate for Linton Tweeds, Ltd.; Johnstone & Wright, architects, 13, Castle Street.

Extensions to biscuit factory for Carr & Co., Ltd.; John Laing & Son, Ltd., Carlisle.

Leatherhead.—School (400 places), Kingston Road, for Surrey E.C.; county architect, County Hall, Kingston-on-Thames.

Maltby.—Houses (60), Cliffs Hill estate; U.D.C. surveyor.

Mansfield.—Houses (56), Bancroft Lane; borough engineer.

North Riding.—New health centre at Eston (£32,000), alterations to Morris Grange, Middleton Tyas (£26,500), ambulance station at Pickering (£3,350), welfare centre at Saltburn (£8,950), welfare centre at Richmond (£9,180), alteration to Eston House, Eston (£3,000), and doctor's house, garage and clinic at Pickering (£8,000), for the C.C.; county architect, County Hall, Northallerton.

Preston.—Houses (98), Ribbleton Hall estate; Irvine Bros., Preston.

Retford.—Dwellings (44), Whinney Moor Lane, for T.C.; Vallance & Westwick, architects, White Hart Chambers, Mansfield.

Sale.—Dwellings (40), Baugley Lane; borough surveyor.

Seascale.—Houses (62) for Ministry of Works; John Laing & Son, Ltd., Dalston Road, Carlisle.

Sheffield.—Warehouse and offices, Thomas Street; A. G. Burrell & Co., Ltd., 24, Change Alley.

Staffordshire.—Extensions to Brewood Grammar School, new school at Yarnfield, Stone, and additions to seven schools; A. C. H. Stillman, county architect, Green Hall, Lichfield Road, Stafford.

Welwyn Garden City.—Houses (68) for U.D.C.; W. Fox, architect, 22, Parkway.

Worsley.—Additional classrooms at Walkden Secondary School (£13,070); county architect, Preston.

Worsley Mesne.—County primary school, Lea Road; C. Musker Bros., Ltd., Swinton, near Manchester.